occasionally some interesting historical facts connected with the development of the subject in hand. Pupils, too, are always interested in men and if the subject is developed in connection with the facts concerning men who have made mathematical history they will likely look upon the subject with more interest and enthusiasm.

A course in the history of mathematics will enlarge the teacher's vision. He should be able to see the points of difficulty in the development of the subject by the race and should be better prepared to take the pupils over these difficulties. He will see the dependence and interdependence of arithmetic, algebra, and geometry. The three merge into each other so gradually that the dividing line cannot be determined. Nothing will help more than a good course in the history of the subject to give the teacher the proper attitude toward these divisions.

NOTES AND NEWS.

UNDER THE DIRECTION OF FLORIAN CAJORI.

As previously announced in these columns, Professor Cajori will be in Europe during the coming year. During his absence, Professor W. D. Cairns, of Oberlin College, Ohio, will act as chairman of the committee on Notes and News, and all contributions of this character should be sent directly to him.

Dr. C. L. BOUTON of Harvard University has been promoted to an associate professorship of mathematics.

The *Educational Review* for May contains an article on "Mathematics for culture" by Professor N. J. LENNES, of the University of Montana.

Dr. C. KÜSCHKE, formerly instructor at the University of California, where he took his doctorate, has accepted an instructorship in mathematics for the coming year at the University of Washington. He has recently been attending lectures at the University of Chicago.

Dr. G. N. GREEN, of the College of the City of New York, has accepted an instructorship in mathematics at Harvard University.

Mr. LESTER HILL, formerly a graduate student at Columbia University and later at the University of Chicago, has been made assistant professor in mathematics at the University of Montana.

Professor N. J. LENNES, head of the department of mathematics at the University of Montana, will spend the coming summer abroad.

Bulletin No. 323, of the University of Texas, contains an article by Dr. EDWARD L. DODD on "The error-risk of the median compared with that of the arithmetic mean."

Mr. EDWARD KIRCHER, graduate student at the University of Illinois, has been appointed to an instructorship in mathematics at the Massachusetts Institute of Technology.

Professor C. RUNGE, of the University of Göttingen, was elected president for 1914 of the German Mathematical Society. According to the most recent list this society has 769 members.

Henry Holt & Company announce that the following two mathematical books are in press: "Analytic geometry of space," by VIRGIL SNYDER and C. H. SISAM; and "Plane analytical geometry," by L. W. DOWLING and F. E. TURNEAURE.

John Wiley and Sons have just published "The theory of numbers," by ROBERT D. CARMICHAEL as No. 13 of the series of mathematical monographs edited by Mansfield Merriman and Robert S. Woodward. Professor Carmichael is also author of No. 12 in this series entitled "The theory of relativity."

The Macmillan Company announces the publication of a new edition of Professor F. R. Moulton's *Introduction to Celestial Mechanics*. This has been revised and largely rewritten, but still preserves the general plan of the earlier edition.

Professor GEORGE N. BAUER has been appointed chairman of the department of mathematics of the college of science, literature, and the arts at the University of Minnesota for the year 1914–15.

An interesting article entitled "Elementary theorems on the hexahedron in non-euclidean geometry," by Dr. ARTHUR RANUM, of Cornell University, was published in the *Quarterly Journal of Pure and Applied Mathematics*, No. 178, 1914.

The annual dinner for instructors and fellows in mathematics, at the University of Chicago, given by the faculty of the department, occurred on the evening of May 15, 1914. The guest of honor was Dr. T. M. Putnam, of the University of California, who had just been promoted to the rank of associate professor and was on his way to Europe where he will spend the next half year on sabbatical vacation.

Professor F. CAJORI'S History of Elementary Mathematics is being translated into the Japanese language by Mr. Seiich Sunagawa, of the Ehimeken Female Normal College.

The Macmillan Company has just published a book which will be of interest to the readers of the MONTHLY. It is entitled "Dialogues concerning two new sciences," by Galileo Galilei, translated from the Italian and Latin into English by HENRY CREW and ALFONSE DE SALVIO. This will be reviewed in a later issue of the MONTHLY.

A new part of the German edition of the large mathematical encyclopedia was recently published. It bears the title "Ansätze und allgemeine Methoden der Systemmechanik." The French edition recently published a part entitled: "Fonctions sphériques; generalizations diverses des fonctions sphériques."

An error was made in the March issue of the MONTHLY, page 86, in the review of A. W. STAMPER'S textbook on the Teaching of Arithmetic, where it was stated that the Austrian method of division is not given. A brief reference with explanation and incompleted division is found on pages 95–96 of this text.

The American Association for the Advancement of Science has appointed a Committee of One Hundred on scientific research, under the government, in the universities and in other institutions. Pure mathematics is represented on this committee by Professor G. A. MILLER, University of Illinois, and Professor E. H. MOORE, University of Chicago.

Special efforts are being made to secure as large a collection as possible of letters by and to LEONHARD EULER for publication in his complete works. In view of the fact that this publication is much more expensive than was expected, the committee in charge is anxious to secure more subscribers for these works, as well as more members of the Euler Society. The members of this society promise to contribute at least ten francs per year towards the expense of publishing Euler's complete works.

An "Elementary Theory of Equations" by Professor L. E. DICKSON, of the University of Chicago, has just been published by John Wiley and Sons. It contains a chapter of 13 pages on complex numbers, one of 33 pages on determinants, and one of 17 pages on resultants and discriminants. The whole book consists of 183 pages. A review of it will appear in a future number of the MONTHLY.

The next Summer meeting of the American Mathematical Society will be held at Providence, R. I., September 8, 9, 1914, in connection with the celebration of the one hundred and fiftieth anniversary of Brown University.

The fourth instalment of the National Geometry Syllabus, which is being reprinted in the *Irish Journal of Education*, appeared in the May issue. It begins with Section B, Logical Considerations.

The summer quarter of the University of Chicago opened June 15th with the usual large attendance. The registration in mathematics is especially strong in the advanced courses.

Dr. C. E. GITHENS, who is principal of the Union School at Wheeling, West Va., was recently elected superintendent of the public schools of that city. He has long been a contributor to the problem department of the MONTHLY.

Mr. J. D. ESHLEMAN has been elected to an instructorship in mathematics at Western Reserve University, and Mr. L. E. WILLIAMS to a similar position in the Georgia School of Technology. Both have been graduate students of the University of Chicago during the past year.

Professor L. E. DICKSON, of the University of Chicago, will spend the first semester, Autumn 1914, in residence at the University of California lecturing along the lines of his special work in number theory. He was at one time a member of the faculty of the University of California.

Miss MARY E. WELLS, formerly instructor at Mount Holyoke College and now a graduate student at the University of Chicago, has been appointed instructor in mathematics at Oberlin College for the coming year, during which time Dr. MARY E. SINCLAIR will be on leave of absence. A recent announcement that Dr. T. H. GRONWALL, of Princeton University, had been appointed to an assistant professorship in mathematics at Oberlin College was erroneous. His appointment was at Princeton University.

Teachers of mathematics who are interested in the wide scope of the applications of mathematics will find it interesting to read a paper by Professor I. J. SCHWATT, of the University of Pennsylvania, entitled "The Applications of the Calculus to the Medical Sciences," published in the *American Journal of the Medical Sciences*, March, 1914, page 409. Since this journal does not usually contain material of a mathematical nature, a special mention here seems desirable.

The firm of Allyn and Bacon has published a trigonometry by Professors E. J. WILCZYNSKI and H. E. SLAUGHT, of the University of Chicago. Among the interesting features of this text are the numerous well-selected applications, and the arrangement of the text in two distinct parts, the first containing only such theoretical development as is essential to the solution of triangles. A review of this book will appear in a later issue of the MONTHLY.

During the recent meeting of the Michigan Schoolmasters' Club at Ann Arbor an exhibit of early mathematical text-books from the university collections and the private libraries of Professors BEMAN, ZIWET and KARPINSKI was displayed in the library. A large number of photographs of mathematical manuscripts in European libraries and from the collection of Mr. G. A. Plimpton were loaned for the exhibit by Professor L. C. KARPINSKI.

The Council of Mathematical Teachers in New England has recently appointed a special committee on the status and welfare of mathematics in secondary schools, to investigate and report on current criticisms of high school mathematics. The membership of the committee is as follows: Mr. G. W. EVANS, Charlestown High School; Professor F. C. FERRY, Williams College; Mr. A. V. GALBRAITH, Middlesex School; Mr. F. P. MORSE, Revere High School; Mr. C. D. MESERVE, Newton High School; Professor S. E. SMITH, Mount Holyoke College; Miss H. R. PIERCE, Worcester High School; and Professor H. W. TYLER, Massachusetts Institute of Technology, *chairman*. Correspondence with persons having special information is invited.

The application of the new school law in Ohio will probably necessitate that those preparing to teach secondary school subjects and looking to certification by the state department of education, shall devote one fourth of their college work directly to preparation for teaching; fifteen semester hours to be of distinctly educational work including practice and observation courses, teachers training courses in secondary school subjects, psychology, history and principles of education, educational methods, etc., fifteen hours to be chosen from the fields of psychology, sociology, logic, ethics, philosophy, and education. Several of the Ohio colleges, among these Ohio State University, Oberlin College and Miami University, are enabling teachers to meet these new requirements at once by offering suitable courses in the summer sessions of 1914.

The annual meeting of the Society for the Promotion of Engineering Education was held at Princeton University, June 23–26, 1914. The papers were printed in advance in the Bulletin of the Society, so that only short abstracts were read at the meetings, thus leaving ample time for discussion. The prospectus stated that "It is necessary to have papers and discussions at a convention, but these are not more than half of the meeting. It would be worth while to come to Princeton, even if there were no papers, just to meet the one hundred and ninety-nine other teachers." At all events, it seems to be a decided step forward to print papers in advance and to spend less time in *reading* and more in *discussion* and in general intercourse.

At the mathematical conference held on April 3d at Ann Arbor, Professor THEODORE R. RUNNING, of the University of Michigan, presented a paper on "Graphical methods applied to the solution of algebraic equations," Miss KATHERINE G. HINE, of the Detroit Central High School, offered "Some class room suggestions," Mr. G. C. BARTOO, of the Jackson High School, discussed "The problem of reducing the number of failures in algebra," and Professor W. B. FORD, of the University of Michigan, talked on "The future of geometry." Next year the conference is planning to have a luncheon and informal discussion to replace part of the formal program. Professor L. C. KARPINSKI was elected chairman of the conference for 1914–1915 and Mr. EDWARD T. GEE, of the Detroit High School, secretary.

The editors of the MONTHLY acknowledge the receipt of the following journals on our exchange list: *School Science and Mathematics, The Mathematics Teacher, The Annals of Mathematics, The American Journal of Mathematics, Transactions of the American Mathematical Society, Bulletin of the Society for the Promotion of Engineering Education, Proceedings of the American Philosophical Society, The Monist, Popular Astronomy, Journal of the Royal Astronomical Society of Canada, The Mathematical Gazette, L'Intermédiaire des Mathématiciens, L'Enseignement Mathématique, Revue Semestrielle des Publications Mathématiques, Periodico di Matematica per L'Insegnamento Secondario, Bolletino di Bibliografia e Storia delle Scienze Matematiche, Rendiconti del Circolo Matematico di Palermo, Giornale de*

Matematiche di Battaglini, Nieuw Archief voor Wiskunde, Wiskundige Opgaven met de Oplossingen, Revista de la Sociedad Matemática Española, Iberica- el Progreso de las Ciencias y de sus Aplicaciones, The Tôhoku Mathematical Journal, The Journal of the Indian Mathematical Society. It is the intention hereafter to mention more frequently in these notes such articles in our exchanges as are deemed to be of special interest to readers of the MONTHLY.

A mathematical colloquium will be held at Edinburgh, July 28–31, immediately following the Napier tercentenary celebration. There will be two lectures by Professor M. D'Ocagne, of Paris, on "Nomography"; four lectures by Professor H. W. Richmond, of Cambridge University, on "Infinity in geometry"; four lectures by Professor E. Cunningham, of Cambridge University, on "Critical studies of modern electrical theories"; and two lectures by Professor E. T. Whittaker, of the University of Edinburgh, on "The solution of algebraic and transcendental equations in the mathematical laboratory." The methods described by Professor Whittaker will be chiefly arithmetical, and the lectures will therefore be supplementary to those of Professor D'Ocagne on nomographic methods, which for most purposes are now said to be generally recognized as superior to the older graphical methods of calculation. The announcement states that "the establishment of nomography as a regular constituent of British mathematical teaching is much to be desired."

Readers of the MONTHLY are asked to give attention to the announcements of the various publishers of mathematical books found in this and other issues. These publishers are not only serving our readers by giving up-to-date information concerning new books on the historical and philosophical aspects of mathematics, as well as text-books in the various fields, but they are also contributing in a substantial manner toward the support of this journal.

Complete sets of the MONTHLY for the year 1913, being the first volume under the reorganization, are in constant demand, but the supply of certain numbers in that volume has been exhausted. These numbers are January and June, 1913. Since the last issue several extra copies of the January number have been sent in and now a few complete sets of volume xx are again available, and several other sets are complete except for the June number. Any one who can contribute an extra copy of either the January or the June number will confer a great favor upon the editors.

The next issue of the MONTHLY will appear in September. There are no issues in July and August. During the summer, Professor Finkel, the treasurer, will be at Boulder, Colorado, in charge of mathematics in the summer session of the University of Colorado. Business communications may still be addressed to him at Springfield, Missouri, where they will receive prompt attention. The Managing Editor will be in residence at the University of Chicago and may be addressed as usual at 5548 Kenwood Ave., Chicago, Ill.